BROOKHAVEN NATIONAL LABORATORY

Work Permit # SDD-2016-023/SS-2016-
Work Order # ___
Job# ___ **Activity#** ___

See "Instructions for Filling out the Work Permit" contained in the Work Planning and Control for Experiments and Operations Subject Area.

1. Work request WCC fills out this section. ☐ **Standing Work Permit**

Requester: P. Gianotti	Date: 10/18/2016	Ext.: 3815	Dept/Div/Group: PO/PHENIX
Other Contact person (if different from requester): Carter Biggs			Ext.: 7515
Work Control Coordinator: C. Biggs		Start Date: 10/25/2016	Est. End Date: 12/31/2017
Brief Description of Work: Disassemble East Carriage (EC) & West Carriage (WC) base and towers and remove from AH to scrap			
Building: 1008	Room: AH	Equipment: Carriage EC Base and Towers	Service Provider: PHENIX, BNL riggers and BNL welders

2. WCC, Requester/Designee, Service Provider, and ESSH (as necessary) fill out this section or attach analysis

ESSH ANALYSIS

Radiation Concerns	☐ None	☒ Activation	☐ Airborne	☐ Contamination	☐ Radiation	☐ NORM	☐ Other
☐ Special nuclear materials involved, notify Isotope Special Materials Group				☐ Fissionable/Radiological materials involved, notify Laboratory Nuclear Safety Officer			
Radiation Generating Devices:	☐ Radiography		☐ Moisture Density Gauges		☐ Soil Density Gauges		☐ X-ray Equipment

Safety and Security Concerns	☐ None	☐ Explosives	☐ Transport of Haz/Rad Material	☐ Pressurized Systems
☐ Adding/Removing Walls or Roofs	☐ Critical Lift	☐ Fumes/Mist/Dust*	☐ Magnetic Fields*	☐ Railroad Work
☐ Asbestos*	☐ Cryogenic	☐ Heat/Cold Stress	☐ Nanomaterials/particles*	☒ Rigging
☐ Beryllium*	☐ Electrical	☐ Hydraulic	☐ Noise*	☐ Silica*
☐ Biohazard*	☒ Elevated Work	☐ Lasers*	☐ Non-ionizing Radiation*	☐ Security Concerns
☐ Chemicals/Corrosives*	☐ Excavation	☐ Lead*	☐ Oxygen Deficiency*	☐ Suspect/Counterfeit Items
☐ Confined Space*	☐ Ergonomics*	☒ Material Handling	☐ Penetrating Fire Walls	☐ Vacuum
Ladder Access Required: ☒ Portable Ladder ☐ Fixed Ladder– Status/Restrictions:				
* Safety Health Rep. Review Required	☐ Haz, Rad, Bio Material Exceed DOE 151.1-C Levels - Contact OEM			☐ Other

Environmental Concerns	☐ None	☐ Work impacts Environmental Permit No.	
☐ Atmospheric Discharges (rad/non-rad/GHG)	☐ Land Use Institutional Controls	☐ Soil Activation/contamination	☐ Waste-Mixed
☐ Chemical or Rad Material Storage or Use	☐ Liquid Discharges	☐ Waste-Clean	☒ Waste-Radioactive
☐ Cesspools (UIC)	☐ PCB Management	☐ Waste-Hazardous	☐ Waste-Regulated Medical
☐ High water/power consumption	☐ Spill potential	☐ Waste-Industrial	☐ Historical Enviornmental Hazards
Waste disposition by:			☐ Other
Pollution Prevention (P2)/Waste Minimization Opportunity: ☒ No ☐ Yes		Environmental Preferable Products Available: ☒ No ☐ Yes	

FACILITY CONCERNS	☒ None	☐ Intermittent Energy Release	
☐ Access/Egress Limitations	☐ Electrical Noise	☐ Potential to Cause a False Alarm	☐ Vibrations
☐ Credited Controls (Use USI Process)	☐ Impacts Facility Use Agreement	☐ Temperature Change	☐ Other
☐ Configuration Management	☐ Maintenance Work on Ventilation Systems	☐ Utility Interruptions	

WORK CONTROLS

Work Practices

☐ None	☐ Exhaust Ventilation	☒ Lockout/Tagout	☐ Spill Containment	☐ Security (see Instruction Sheet)
☒ Back-up Person/Watch	☒ HP Coverage	☐ Posting/Warning Signs	☐ Time Limitation	☐ Other
☐ Barricades	☐ IH Survey	☐ Scaffolding-requires inspection	☐ Warning Alarm (i.e. "high level")	☐ Electrical Inspection Required

Personal Protective Equipment

☐ None	☐ Ear Plugs	☒ Gloves, as necessary	☐ Lab Coat	☒ Safety Glasses, where req'd		
☐ Coveralls	☐ Ear Muffs	☐ Goggles	☐ Respirator*	☐ Safety Harness		
☐ Disposable Clothing	☐ Face Shield	☒ Hard Hat, when Crane used	☐ Shoe Covers	☒ Safety Shoes, as req'd	☐ High visibility cloths/vest	☐ Other

Permits Required (Permits must be valid when job is scheduled.)

☒ None	☒ Cutting/Welding	☐ Impair Fire Protection Systems
☐ Concrete/Masonry Penetration	☐ Digging/Core Drilling	☐ Rad Work Permit-RWP No
☐ Confined Space Entry	☐ Electrical Working Hot	☐ Other

Dosimetry/Monitoring

☒ None	☐ Heat Stress Monitor	☐ Real Time Monitor	☐ TLD
☐ Air Effluent	☐ Noise Survey/Dosimeter	☐ Self-reading Pencil Dosimeter	☐ Waste Characterization
☐ Ground Water	☐ O_2/Combustible Gas	☐ Self-reading Digital Dosimeter	☐ Other
☐ Liquid Effluent	☐ Passive Vapor Monitor	☐ Sorbent Tube/Filter Pump	

Training Requirements (List specific training requirements)

Skill appropriate training for welders cutting towers from base, PHENIX Awareness or equiv., CA Acess or equiv.

Work screening has identified the following as the reason for permitted work:	**When work is categorized as worker planned work and a permit is used only the following signatures are required: (Although allowed, there is no need to use back of form)**	
☒ **ESSH**	WCC:	Date:
☐ **Complexity**	Service Provider:	Date:
☒ **Work Coordination**	Authorization to start:	Date:
☐ **Permit Not Required** (Sections 3 through 7 optional)	(Department/Division, or their equivalent, Sup/WCC/Designee)	

3. Both work requester and service provider contribute to work plan (use attachments for detailed plans)

Work Plan (procedures, timing, equipment, scheduling, coordination, notifications, and personnel availability need to be addressed in adequate detail): East Carriage (EC) disassembly of carriage towers from base is necessary to reduce size and weight of components to weights that can be handled by the PHENIX 40 ton AH crane. This WP applies to both the EC and WC, which are essentially identical, when stripped. See attached description of work. Note: Please refer to Work Permit #SDD-2016-003 for details on removing detector components, electronics and utilities to strip the EC/WC down to just the base and towers. Note: the procedure is the same for the EC and WC.
Special Working Conditions Required (e.g., Industrial Hygiene hold points or other monitoring) None
Notifications to operations and Operational Limits Requirements:
Post Work Testing, Notification or Documentation Required:

Job Safety Analysis Required: ☐ Yes ☐ No	Review Done: ☐ in series ☐ team

Reviewed by: * Primary Reviewer signature (not required for Worker Planned Work) means that the Review Team members were appropriate for the work that was planned, the Team visited the job site, hazards and risks that could impact ESSH have been considered and controls established according to BNL requirements. In addition, this signature indicates that applicable JRAs, FRAs, as well as other planning documents have been reviewed and training requirements have been identified and recorded on this permit.

Title	Name (print)	Signature	Life #	Date
ES&H Professional				
F&O Facility Project Manager				
Service Provider				
Work Control Coordinator				
Safety Health Representative				
Research Space Manager				
Other				
Other				
Required Walkdown Completed				
*Primary Reviewer				

4. Job site personnel (Supervisor and workers) fill out this section.

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements (including any attachments) and all training required for this permit is current/complete. Job Supervisor/Contractor Supervisor signatures also includes verification that worker training required for this permit is current/complete.

Job Supervisor:		Contractor Supervisor:	
Workers:	Life#:	Workers :	Life#:

Workers are encouraged to provide feedback on ESSH concerns or on ideas for improved job work flow. Use feedback form or space below.

5. Department/Division, or their equivalent, Line Manager or Designee

Conditions are appropriate to start work: (Permit has been reviewed, work controls are in place and site is ready for job.)

Name:	Signature:	Life#:	Date:

6. Worker provides feedback.

Worker Feedback (use attached sheets as necessary)

a) WCM/WCC: Are there any changes as a result of worker feedback? ☐ Yes ☐ No

Note: See Work Planning and Control for Experiments and Operations Subject Area section 2.6.

7. Post Job Review/Closeout: Work Control Coordinator (authorizing dept.) checks quality of completed permit and ensures the work site is left in an acceptable condition. (WCC can delegate clean up of job site to work supervisor.) The WCC ensures that the change process to update drawings, placards, postings, procedures, etc., is initiated, if necessary.

Name:	Signature:	Life#:	Date:

Comments:

Disassembly of the PHENIX East and West Carriages (EC and WC)

Introduction

The PHENIX Collaboration will remove and repurpose all components comprising the PHENIX East and West Carriages ("EC" and "WC") during the 2016 PHENIX Removal and Repurposing (R&R) shutdown after run 16 for the EC and after run 17 for the WC. Prior to commencing the procedures described herein all detector subsystems, subsystem services, racks, platforms, cable trays, bolted on structural supports and all other items mounted on the EC/WC shall have been removed and repurposed ("R&R") in accordance with work plans SDD-2016-003 (EC) and SDD-2016-015 (WC) and individual workplans where required for individual subsystem R&R. This document describes the work plan to disassemble and dispose of the remaining portions of the carriages after completion of the above referenced workplans, namely the welded carriage base-arm-tower structures for the EC and WC and the Hillman roller sets (4 each) on which the carriages are supported.

Disassembly Procedures

References

Drawings

RD002-0501-145-B	Phenix Detector Carriage Base-Arms Assy
RD002-0501-103-A	Phenix Detector Carriage Tower, Left, Weldment

(NOTE: Right tower is mirror of left tower)

Removal of Towers

Notes:

- Refer to the attached diagrams as necessary for the following steps
- Details of lifting and cutting tasks not fully described below are considered worker planned work for the bargaining unit personnel assigned to these tasks. These details are to be discussed and agreed upon during the pre-work reviews to be conducted as steps 1 and 2 below. Should additional written documentation be deemed necessary at that time, such documentation shall be generated and appended to this work permit.

- This procedure applies equally to the EC and WC disassembly. Any lessons learned during the disassembly of the EC should be incorporated into this work permit prior to commencing the WC disassembly. The EC disassembly is expected to take place in early fall 2016 (FY2017Q1) The WC disassembly is expected to take place approximately one year later (FY2018Q1).

1. Review cutting procedure with BNL welders
2. Review lifting procedure with BNL riggers
3. Drill and tap 4 1-8 UNC holes at the positions indicated on the attached tower lifting point diagram for both towers.
4. Attach swivel eyes, shackles and slings to the PHENIX AH 40 ton crane.
5. Position the crane directly above the cg o the tower to be removed and take all slack off of slings until they are just slightly loaded
6. Attach torch cutting equipment and cut along the indicated lines on the tower
7. Once the torch cutting has severed the tower from the base lift it off and lay it on flat bed truck to be removed to its disposition area (to be determined by PHENIX R&R manager)
8. Repeat steps 4 thru 7 for the second tower
9. Attach 4 slings to 4 corners of remaining base and position crane directly above the cg of the remaining base and arm weldment and remove slack from slings
10. Unbolt the Hillman Rollers from the base
11. Lift the base off of the rollers and lay it on flat bed truck to be removed to its disposition area (to be determined by PHENIX R&R manager)

(Note: Additional cutting of towers and or base beyond that described above may be required for ultimate disposition. Such additional work shall be planned separately.)

Work Permit Closeout

After completion of all work described above, those involved in the coordination and implementation of the work described shall provide appropriate feedback on the effectiveness of the work procedures described herein, any lessons learned during this work effort and any other relevant information that could be useful to refer to when performing similar work in the future. Such feedback will be documented in the closeout section of this work permit and/or on separate sheets attached hereto.

East Carriage Tower Lifting Plan

Location: Building 1008

Total Weight of Lift: Approx. 19,662lbs

Description of Material Being Lifted:

East Carriage Arm is composed of:

Welded Steel Plates

Dimensions: See Attached Drawing

Center of Gravity: See Attached Drawing

Equipment List:

4X 12’ Synthetic Slings (10,000lb Rating) minimum

4X 1” Hoist Rings (10,000lb Rating) minimum

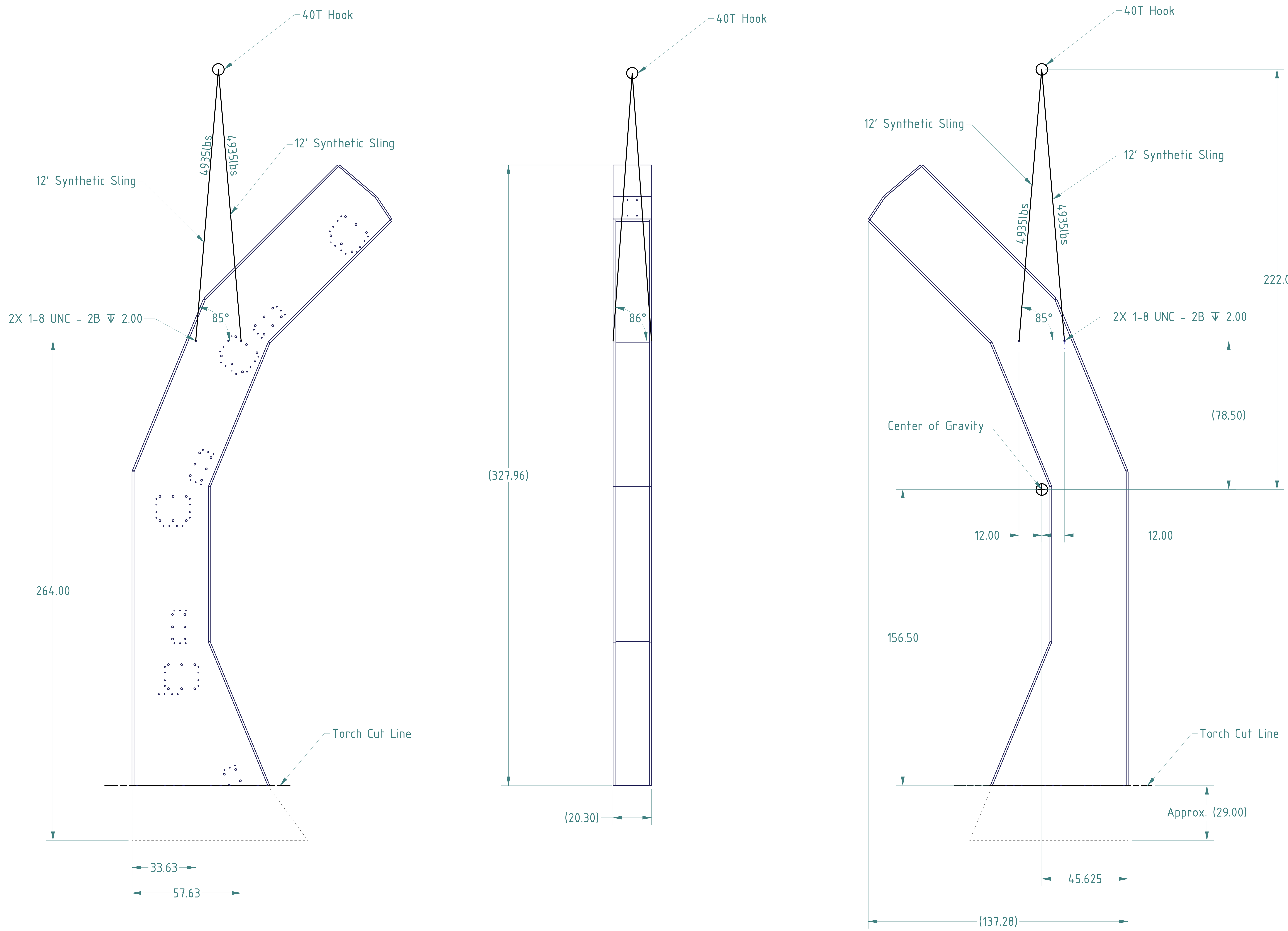
4X 1” Shackles (17000lb Rating) minimum

Description of Lift:

See Attached “ Disassembly of the PHENIX East and West Carriages (EC and WC)”

All lifting operations must be conducted in accordance with ANSI standards and the DOE and OSHA requirements.

NOTES:



REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A		10/19/2016	

PRELIMINARY

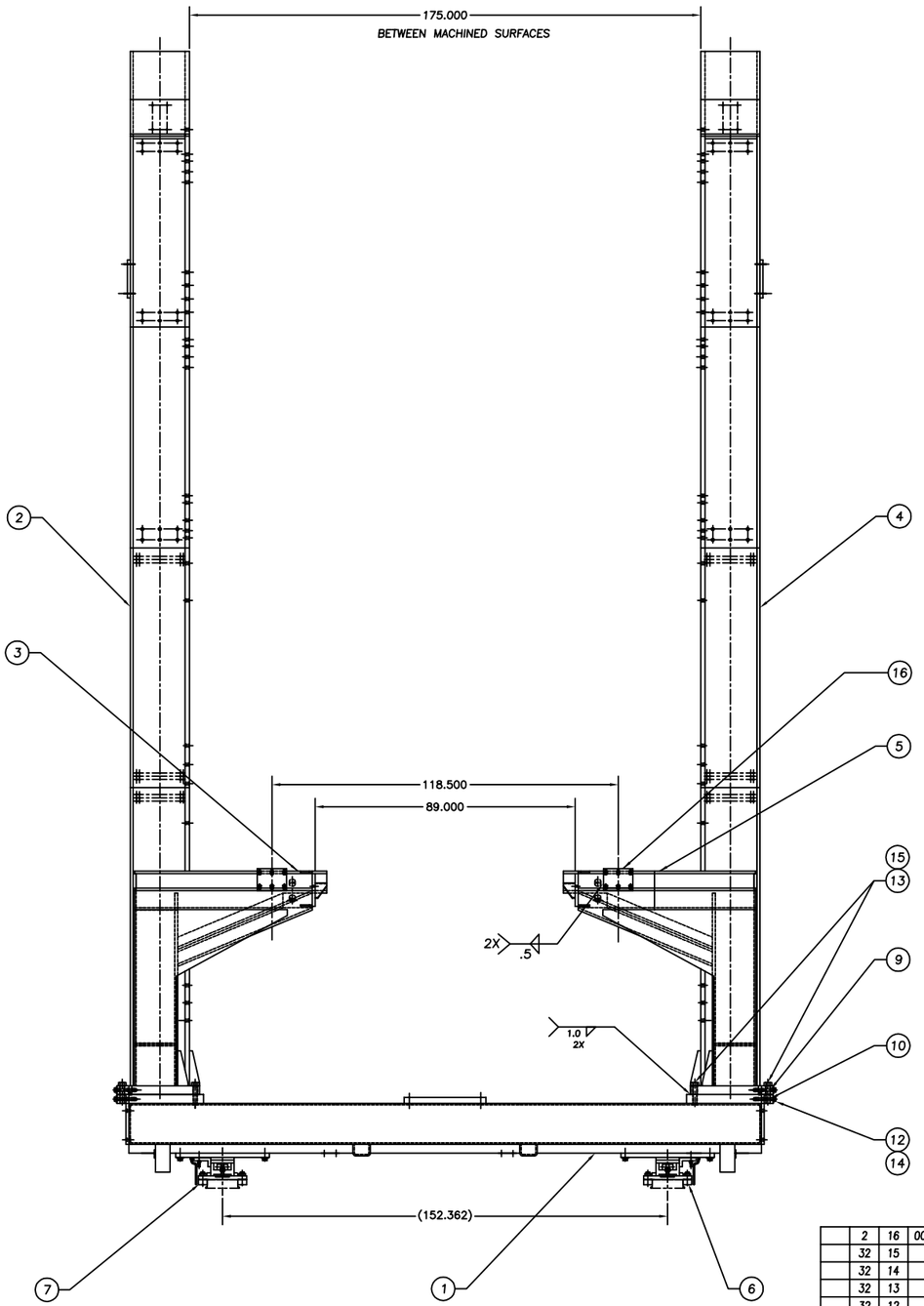
FOR QUOTATION PURPOSES ONLY

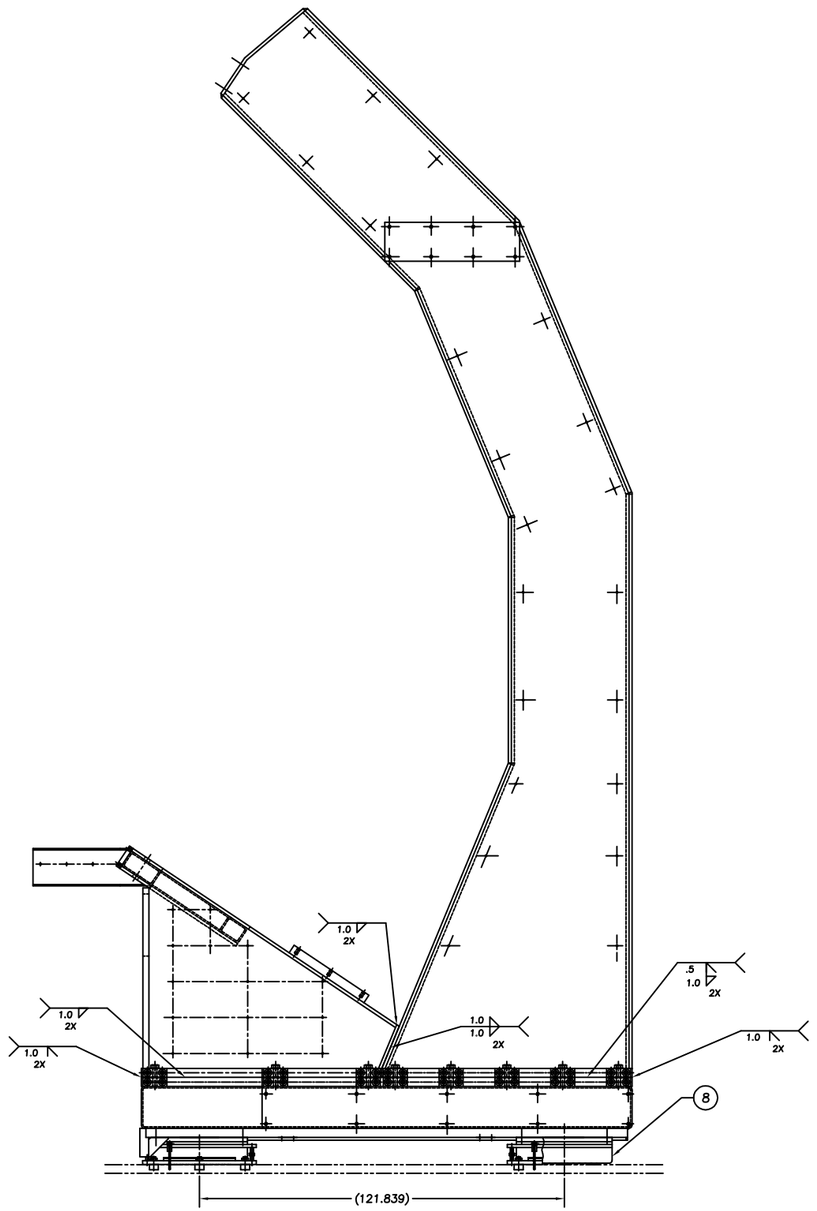
THIRD ANGLE PROJECTION	NEXT ASSEMBLY			BROOKHAVEN NATIONAL LABORATORY Upton, NY 11973
INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.5M-1994 UNLESS OTHERWISE SPECIFIED: ALL DIMENSIONS ARE IN millimeters DECIMAL TOLERANCES X.X ± X.XX ± X.XXX ± ANGLES ±	DRAWN BY:	Pontieri	10/19/2016	PROJECT: PHENIX
	CHECKED BY:		10/19/2016	SYSTEM:
	ENGINEER APPROVAL:	Lynch	10/19/2016	MODEL/DRAWING NAME:
	Q.A. APPROVAL:		10/19/2016	SIZE D · DRAWING NUMBER: Carriage Tower Lift Plan · REV. A
FINISH ✓ · MAX. · BREAK EDGES: MIN.	SAFETY ENGINEER:		10/19/2016	Q.A. CATEGORY: · SCALE: · WEIGHT: · SHEET 1 OF 1

			REV
			SHEET
REVISION STATUS OF SHEETS			

NOTES:
1. REMOVE CLAMPS (ITEMS # 9 & 10) AFTER WELDING AND FINISH WELDING ALL AROUND.

REVISIONS						
REV	ZONE	ECN NO.	DESCRIPTION	BY	DATE	CKR	APP
A			INITIAL RELEASE				
B		0501-005	ADDED RICH MOUNT PLATES	RR	9/2/98		





QUANTITY	ITEM NO.	PART NUMBER	DESCRIPTION	REMARKS
2	16	002-0501-301	MOUNTING PIVOT (CARRIAGE)	STEEL
32	15		WASHER, PLAIN 1.5 SIZE	STEEL
32	14		WASHER, PLAIN 1.0 SIZE	STEEL
32	13		SCREW, HEX HEAD 1.50-6 UNC, 6.0 LG.	STEEL, GRADE 8
32	12		SCREW, HEX HEAD 1.00-8 UNC, 6.0 LG.	STEEL, GRADE 8
	11			
16	10	002-0501-147	CLAMP BASE	
16	9	002-0501-146	CLAMP, TOWER	
1	8	002-0501-139	HILMAN ROLLER ASSY	
1	7	002-0501-133	HILMAN ROLLER W/GUIDANCE ASSY (RIGHT)	
2	6	002-0501-124	HILMAN ROLLER W/GUIDANCE ASSY (LEFT)	
1	5	002-0501-104	ARM, LEFT, WELDMENT	

BILL OF MATERIALS

QUANTITY	ITEM NO.	PART NUMBER	DESCRIPTION	REMARKS
1	4	002-0501-103	TOWER, LEFT, WELDMENT (WEST)	
1	3	002-0501-102	ARM, RIGHT, WELDMENT	
1	2	002-0501-101	TOWER, RIGHT, WELDMENT (WEST)	
1	1	002-0501-100	BASE FRAME, WELDMENT	

BILL OF MATERIALS

OUTSTANDING ECN NUMBERS

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M-1989

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES
X ± .06
.XX ± .030
ANGULAR TOLERANCE ± 1°

NA FINISH

BREAK SHARP EDGES MIN. .03 MAX. .01

RHIC

DRAWN S. MASON 12/29/95

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
UPTON, N.Y. 11973

TITLE: PHENIX
DETECTOR CARRIAGE
BASE-ARMS ASSY, WEST

SIZE E | DRAWING NUMBER RD002-0501-145 | REV. B

QA CATEGORY Q-2 | SCALE: 1/16 | WEIGHT: 113650 | SHEET 1 OF 1

REV B | SHT 1 OF 1 | RD002-0501-145 | DWG NO

NOTES:

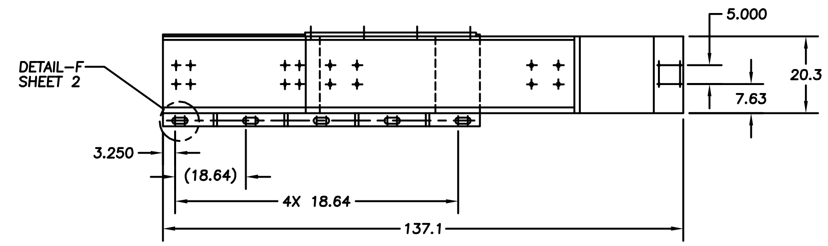
1. WELDERS WORKING ON THIS PART OR ANY SUBCOMPONENTS SHALL BE QUALIFIED IN ACCORDANCE WITH AWS D1.1.
2. WELD PROCEDURES AND INSPECTIONS SHALL BE PERFORMED IN ACCORDANCE WITH AWS D1.1 STRUCTURAL WELDING CODE – STEEL.
3. RECORD OF INSPECTION FOR EACH WELD SHALL BE INCLUDED IN QUALITY ASSURANCE DOCUMANTATION.
4. WELDMENT SHALL BE STRESS RELIEVED AFTER WELDING.

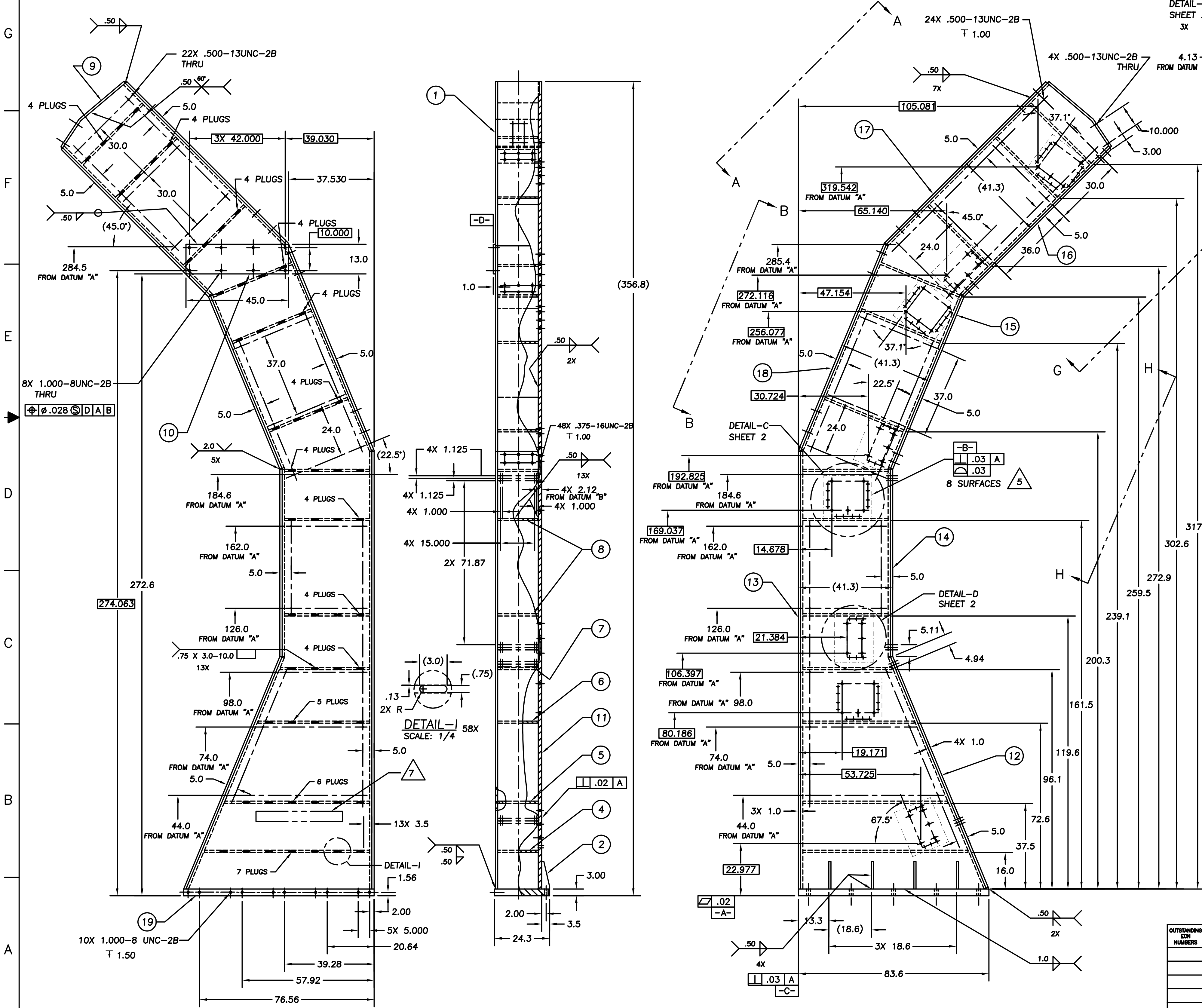
5\. MINIMUM MATERIAL REMOVAL REQUIRED.

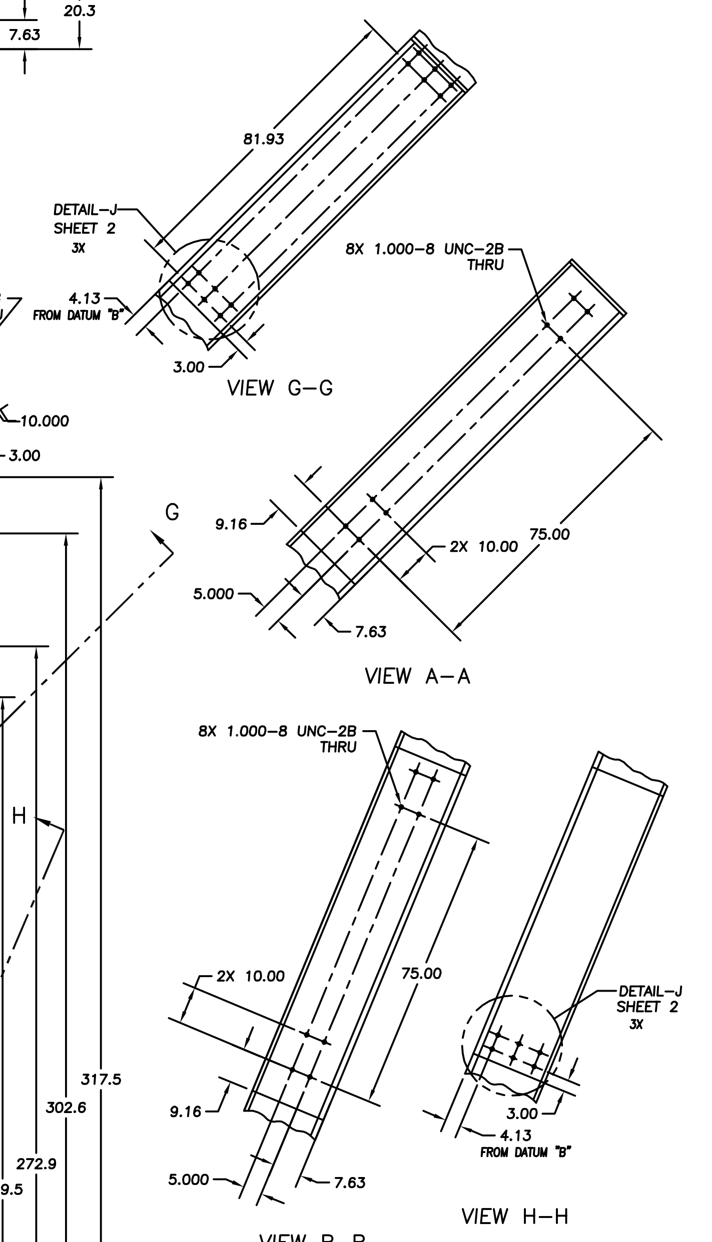
6\. DETAIL–ITEM No.1 & 11 CAN BE FABRICATED FROM 2 TO 4 PLATES. FULL PENETRATION WELD WITH BACKING PLATES REQUIRED.

7\. STAMP DRAWING NUMBER AND REVISION LETTER APPROXIMATELY WHERE SHOWN IN .50 HIGH CHARACTERS.

REVISIONS							
REV	ZONE	ECN NO.	DESCRIPTION	BY	DATE	CKR	APP
A			INITIAL RELEASE				







QUANTITY	ITEM NO.	PART NUMBER	DESCRIPTION	REMARKS
1	19		H.R.PLATE	STEEL ASTM A36
1	18		H.R.PLATE 2" THK	STEEL ASTM A36
1	17		H.R.PLATE 2" THK	STEEL ASTM A36
1	16		H.R.PLATE 2" THK	STEEL ASTM A36
1	15		H.R.PLATE 2" THK	STEEL ASTM A36
1	14		H.R.PLATE 2" THK	STEEL ASTM A36
1	13		H.R.PLATE 2" THK	STEEL ASTM A36
1	12		H.R.PLATE 2" THK	STEEL ASTM A36
1	11		H.R.PLATE 1.5" THK	STEEL ASTM A36
1	10		H.R.PLATE	STEEL ASTM A36
1	9		H.R.PLATE 1" THK	STEEL ASTM A36
9	8		H.R.PLATE 1" THK	STEEL ASTM A36
1	7		H.R.PLATE 1" THK	STEEL ASTM A36
1	6		H.R.PLATE 1" THK	STEEL ASTM A36
1	5		H.R.PLATE 1" THK	STEEL ASTM A36
1	4		H.R.PLATE 1" THK	STEEL ASTM A36
	3			
4	2		H.R.PLATE 1" THK	STEEL ASTM A36
1	1		H.R.PLATE 1" THK	STEEL ASTM A36

BILL OF MATERIALS

OUTSTANDING ECN NUMBERS

INTERPRET IN GENERAL ACCORDANCE WITH ASME Y14.24M–1989

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
DECIMAL TOLERANCES
.X ± .08
.XX ± .02
.XXX ± .005
ANGULAR TOLERANCE ± 1°

125 FINISH — BREAK SHARP EDGES MAX. .06 MIN. .01

RHIC

DRAWN BY: S. MASON 11/21/95
DESIGN APPROVAL / CHECKED BY / ENGINEER APPROVAL / SUPERVISOR APPROVAL / Q.A. APPROVAL

BROOKHAVEN NATIONAL LABORATORY
ASSOCIATED UNIVERSITIES, INC.
UPTON, N.Y. 11973

TITLE: PHENIX DETECTOR CARRIAGE TOWER, LEFT, WELDMENT (WEST)

SIZE: E | DRAWING NUMBER: RD002–0501–103 | REV. A

Q.A. CATEGORY: Q–2 | SCALE: 1/16 | WEIGHT: 22,825 | SHEET 1 OF 2

DWG NO RD002–0501–103 SHT 1 OF 2 REV A